Developing Effective Performance Measures

Software Engineering Institute
Carnegie Mellon University
Pittsburgh, PA 15213

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Report Documentation Page

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HELLO, MY NAME IS _____

Some Logistics and Guidelines

Restroom location?

Beverages and snacks?

Lunchtime arrangements?

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Some Logistics and Guidelines

Let's return from breaks on time.

Let's stay focused. Please shut your phone off or enable silent mode. Please handle email and phone calls during a break.

One speaker at a time, please. Sidebar conversations make it difficult for others to hear.

Some Logistics and Guidelines

I have a hard time asking for help.

Get Your ASK In Gear!

Agenda

Start	End	Duration	Activity
9:00	9:30	0:30	Strategic Planning Overview
9:30	10:30	1:00	Presentation
10:30	10:45	0:15	Break
10:45	11:30	0:45	Presentation & Group Exercise
11:30	12:30	1:00	Lunch
12:30	2:00	1:30	Group work session
2:00	3:00	1:00	Outbrief
3:00	4:00	1:00	More practice

Times are approximate

Module Topics

Introductory concepts
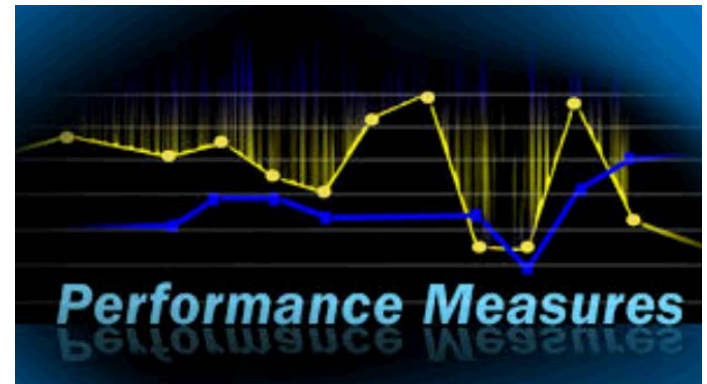
What is a "performance measure"?

What do we measure?

The relationship of performance measurement to work plans

What could possibly go wrong?

What does a "good" performance measure look like?

Putting it all together

Performance Measures

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Why We Are Here

Accountability for performance has become increasingly critical.

- The VA must understand the key drivers behind its performance and demonstrate the value of its work.

- Focus on the use of *data* is a key principle guiding any performance management system.

- Performance measurement provides information on how current programs and activities are working and how resources can be allocated to optimize effectiveness.

Performance management strives to align all the VA's subsystems to achieve results.

- Divisions
- Processes
- Teams
- Individuals

You Can't Manage What You Can't Measure

Performance **management**   A forward-looking process used to set goals and regularly check progress toward achieving those goals.
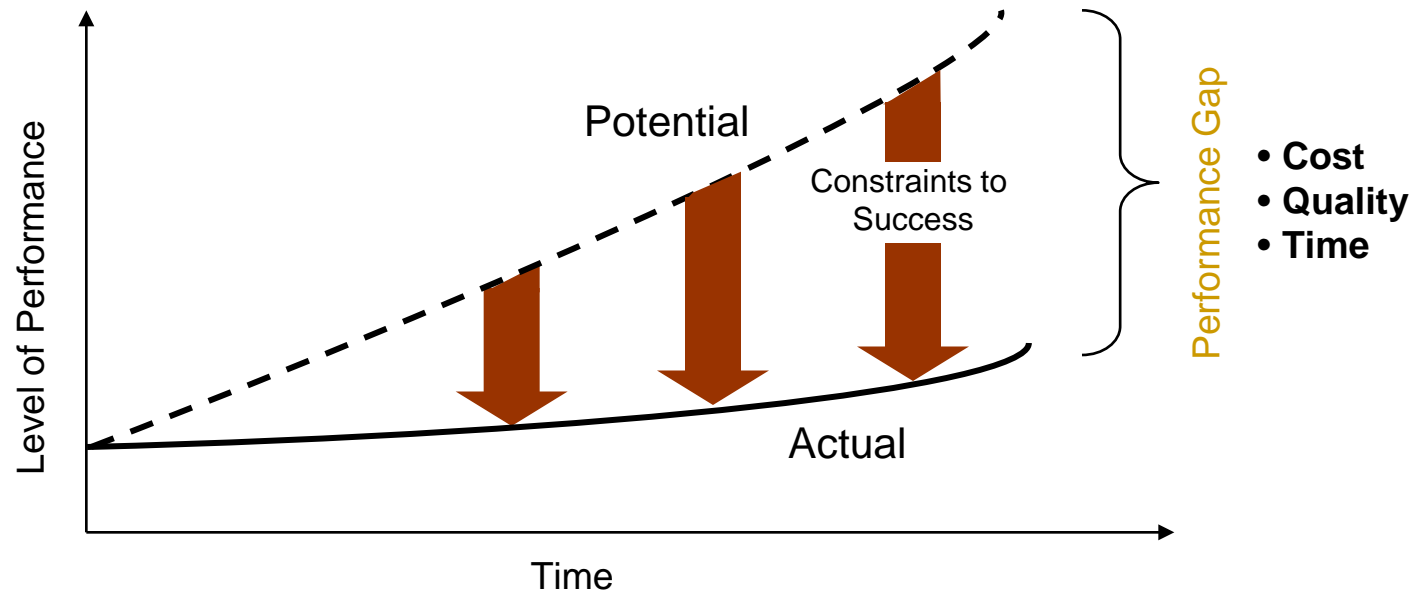
Performance **measurement**   A process by which an organization monitors important aspects of its programs, systems, and processes.

Performance **measure**   The quantitative or qualitative measure that is designed to track progress towards achieving a goal.
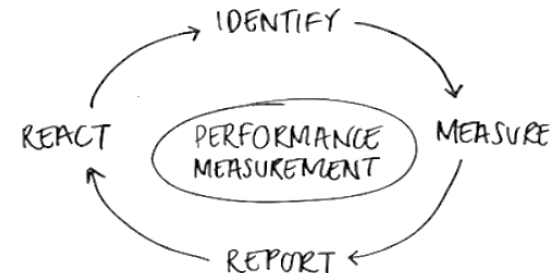
We All Want To Improve Our Performance

What can we do as individuals and as teams of individuals to realize our potential?

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But First You Need to Determine Where You Are

In the absence of measurement, we are like a traveler without a map … wandering, directionless, and confused.

But to use a map, you must know where you are!

Measurement helps us establish where we are, whether we've made progress, what has changed, and where we need to go.

The World Without Measurement
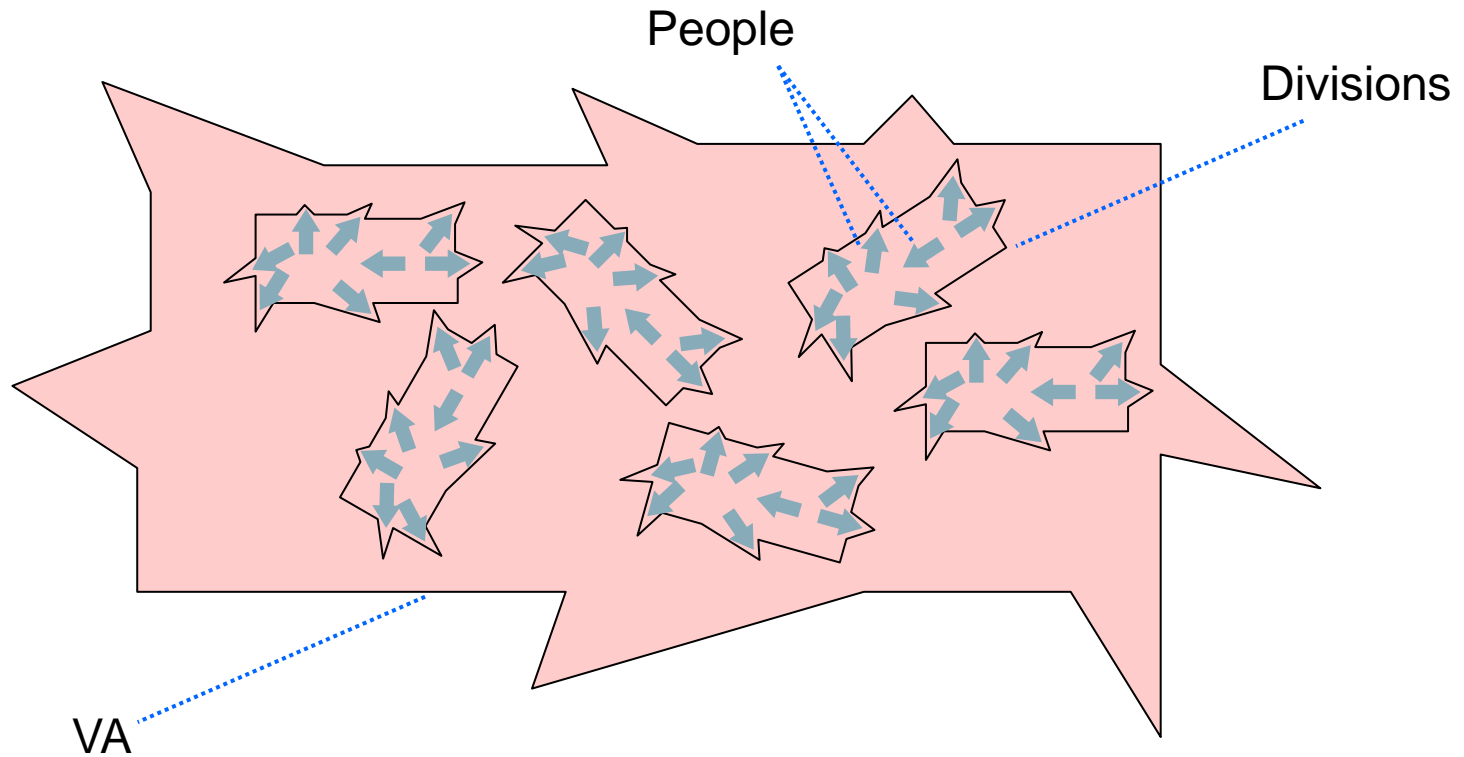

Science?

Engineering?

Medicine?

Without Performance Measurement

Building Alignment and Synergy

Performance management strives to align
all the VA's subsystems to achieve results.

- Divisions
- Offices
- Teams
- Individuals

Time
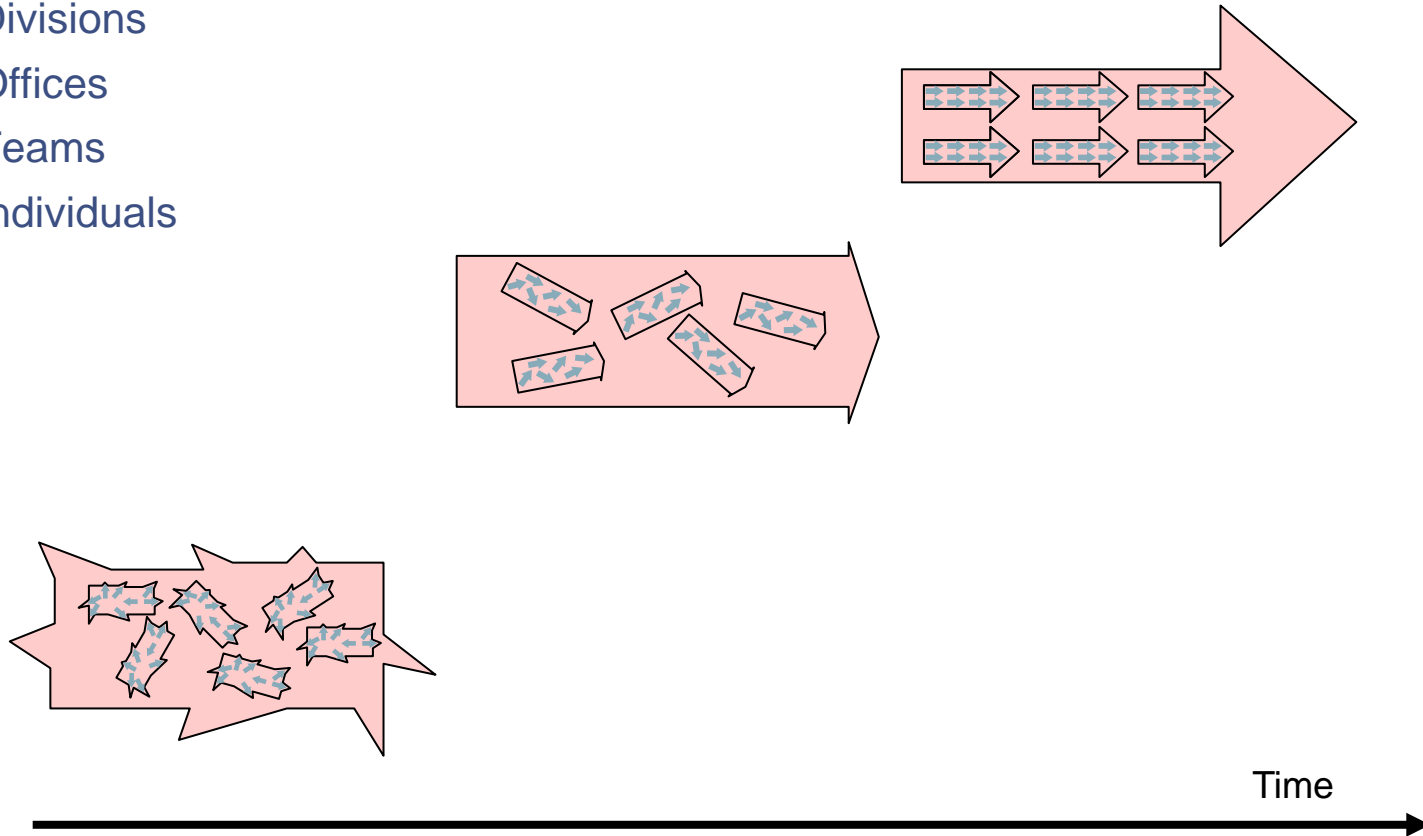
Cascading and Linked Goals

Increasingly strategic

- VA Strategic Plan
- VHA Strategic Plan
- OIA Strategic Plan
- OIA Operating Plan
- Division Operating Plan
- Office Work Plans
- Individual Performance Plans

Increasingly detailed

OIA Performance Management

OIA Goals

Division Initiatives
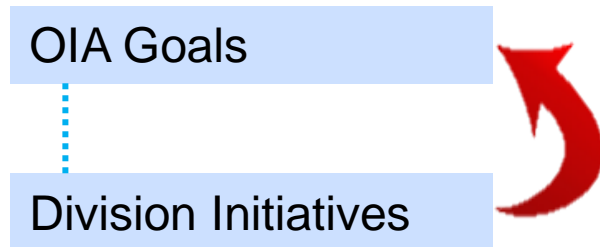
Some divisions develop initiatives that are mapped to OIA goals.

Accomplishing a division initiative supports the achievement of the OIA goals.

19

OIA Performance Management

OIA Goals

Division Initiatives

Work Plan

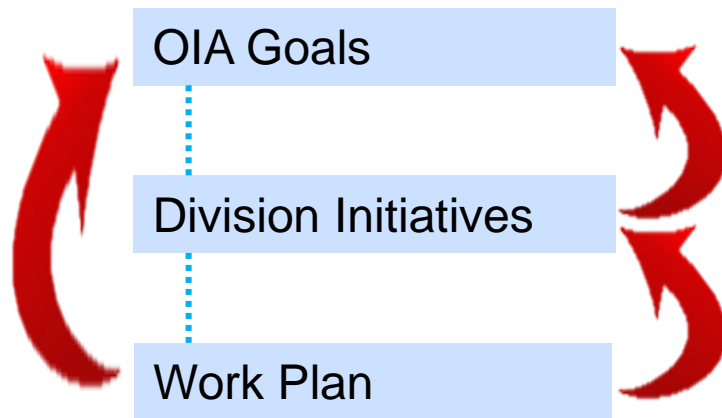In some cases, work plan activities are mapped directly to OIA Goals.

A Division Office establishes a *Work Plan* to address the intent of a Division Initiative.

If the plan is executed successfully, then the intent of the initiative is met.

If the intent of the initiative is met, then progress is made in achieving the OIA goal that the initiative is mapped to.

OIA Performance Management

It is at the work plan level where *work* is actually accomplished.
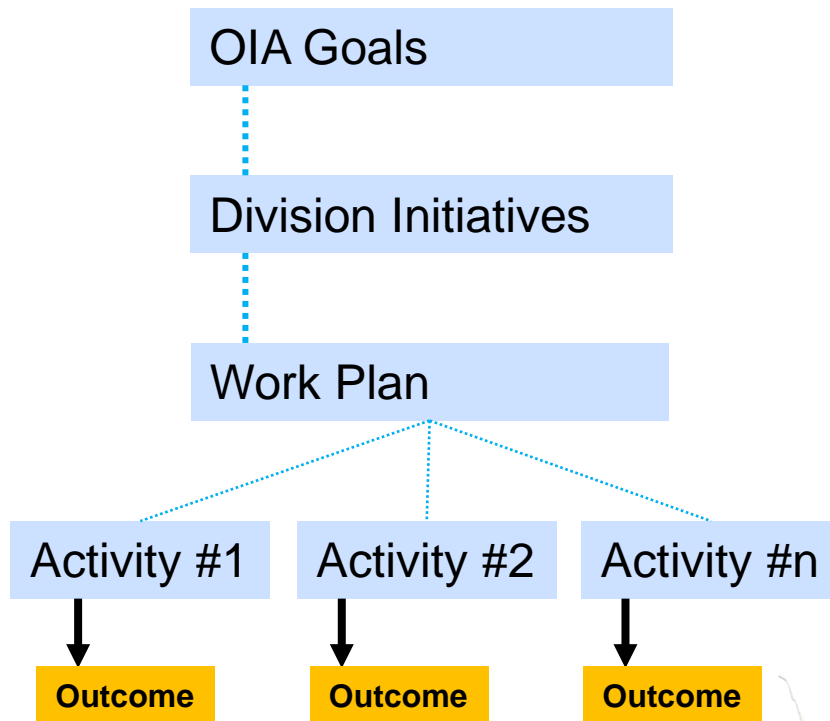
A work plan is composed of activities.

Activities have outcome(s).

If the outcomes are successfully achieved then the work plan was successfully achieved … which ultimately leads to achievement of the OIA goals.
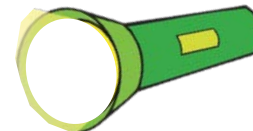
OIA Performance Management

Outcomes are the actualization of the activities documented in the work plan.

Outcomes are observable, measurable entities.

Outcomes are what we care about.

Outcomes are what we measure!

Module Topics

Introductory concepts

▶ What is a "performance measure"?

What do we measure?

The relationship of performance measurement to work plans

What could possibly go wrong?

What does a "good" performance measure look like?

Putting it all together

Performance Measures

Clarifying Some Terminology

Term	Explanation
Activity	A description of the task that produces an intended outcome. The outcome is the objective of the activity and should be specified. The outcome is not the output. It is the hoped-for condition that arises based on the output.
Performance Measure	Quantitative: A quantitative variable that portrays a key characteristic of the outcome and the scale it applies to. Qualitative: A categorical variable that portrays a key characteristic of the outcome.
Target	This is the target value for the performance measure. The target is the value of the performance measure that is to be achieved AND the date when it will be achieved.

Always strive for **clarity** when writing each of these.
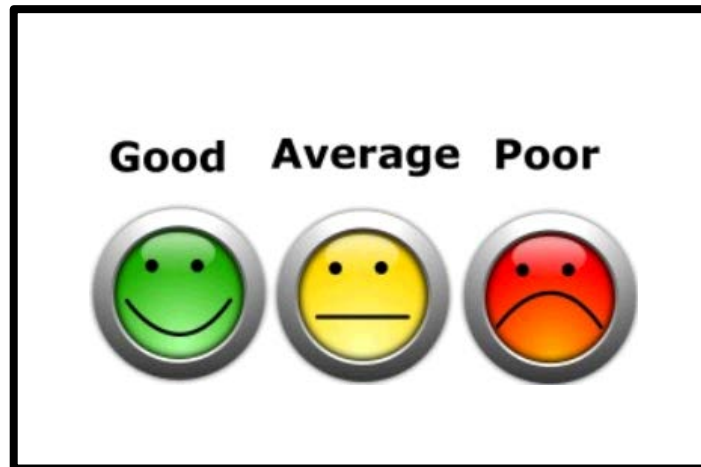
Two Types of Measures

Quantitative

Qualitative

25

Quantitative Performance Measures

A quantitative performance measure is composed of

- a number
- a unit of scale

The *number* provides the magnitude (how much)

The *unit of scale* gives the number a meaning (what).

Examples: Numbers and Unit of Scale

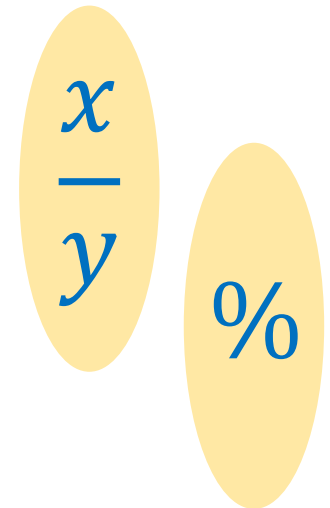| Number		Unit of Scale
3	→	**Dollars**
27	→	**Certifications**
150	→	**Patients**
10.5	→	**Centimeters**
9	→	**Defects**
220	→	**Minutes**

Quantitative Performance Measures

In many cases, multi-dimensional units of measure are used.

- Expressed as ratios
- Examples:

  # of accidents per year

  # of certifications awarded per # of individuals trained

  # of successful logins to system per login attempts

$$\frac{x}{y}$$

$\%$

Qualitative Measures
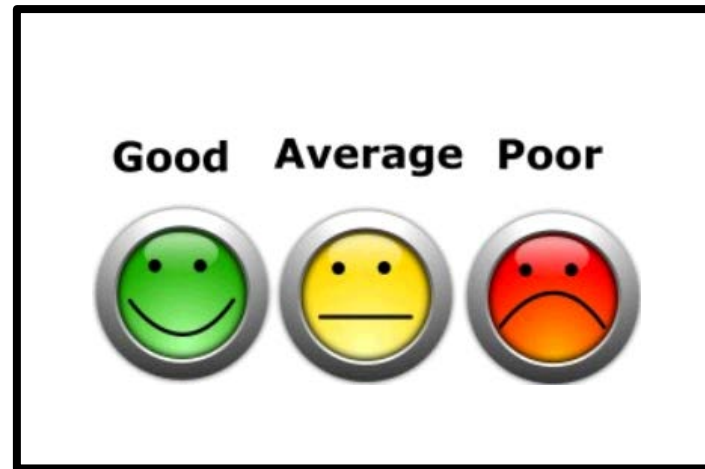
Used when quantitative measures are unavailable or inapplicable.

Qualitative Performance Measures

Qualitative measures are also referred to as *categorical* data.

Qualitative indicators are viewed as subjective that are filtered through perceptions. They can therefore be imprecise when compared to quantitative measures.

Document development	New Technology Introduction	Customer Satisfaction
- Plan completed - Research completed - Draft complete - Draft peer-reviewed - Completed/Approved	- Requirements defined - Design completed - Prototype developed - Testing completed - Rollout completed	- Excellent - Very good - Good - Satisfactory - Poor - Very poor - Unacceptable

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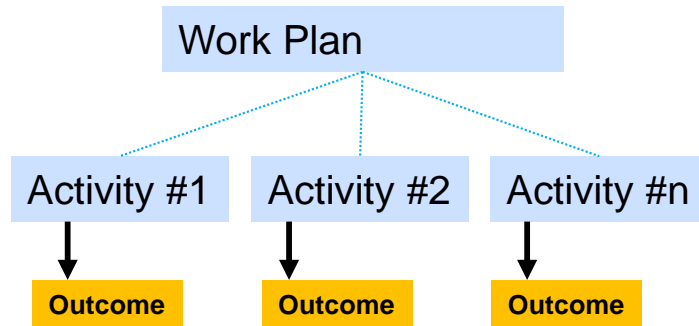
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Performance Measures

What Do We Measure?

Work Plan

Activity #1   Activity #2   Activity #n

Outcome   Outcome   Outcome

1   **Quality of outcome**

2   **Progress towards achieving outcome**

When you think performance measurement, think …

… on the customer.

![positive impact]

Work plan activity

Has at least one

Outcome

Intended to benefit

Internal or external customer
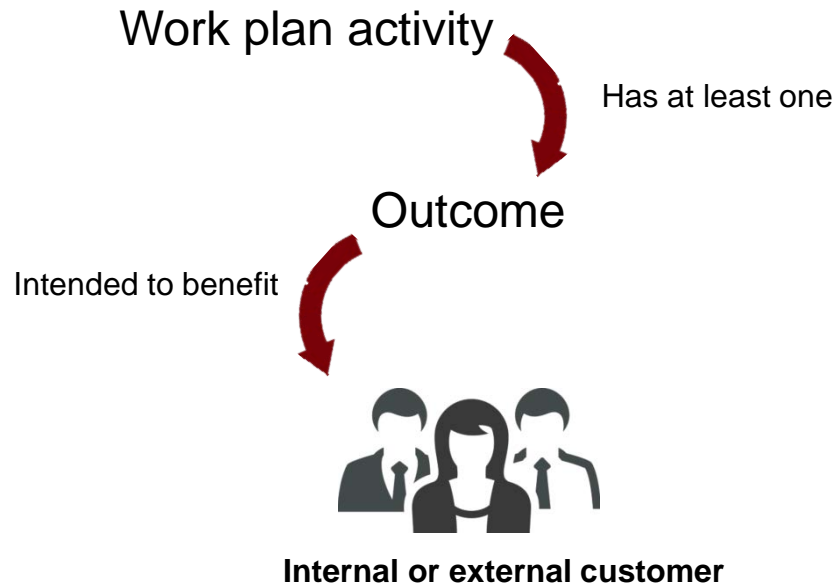
The best performance measures evaluate the impact of the outcome of the activity on the customer.

Define your performance measure from the customer's perspective!
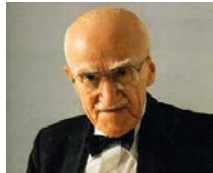
And what matters to the customer?

What Do We Mean By "Quality"?

In technical usage, quality can have two meanings:

Crosby

the characteristics of a product or service that bear on its ability to **satisfy stated or implied needs**

Juran

a product or service **free of deficiencies**

Source: The American Society for Quality; Quality Glossary; http://asq.org/glossary/q.html

Comparing the Definitions of Quality

1 Features that meet or exceed customer needs

2 Freedom from deficiencies

Higher quality enables an organization to:

- increase customer satisfaction
- meet or exceed competition
- increase market share
- secure premium prices

Higher quality enables an organization to:

- reduce rework and waste
- reduce field failures
- reduce customer dissatisfaction
- reduce pilot testing time
- shorten time to put new products on market
- increase capacity
- improve delivery performance

pop quiz?

A staff person in your division has been tasked to develop a training course to teach veterans how to log onto a VA service.

Which of the following performance measures is the best … and why?

1. The number of pages of materials prepared for the training course.

2. The number of students that have registered for the training.

3. Course evaluations – the percentage of training course attendees that rated the course as "satisfactory" or "excellent."

4. The percentage of veterans that were able to log on to the HI service without help from the call center (after receiving the training).

5. Post-course survey results of veterans that took the training.

Example: Bad Performance Measure

Perf. Meas. = # of pages materials prepared for the training course.

Measuring performance from the organization's point of view, rather than from the customer's perspective.
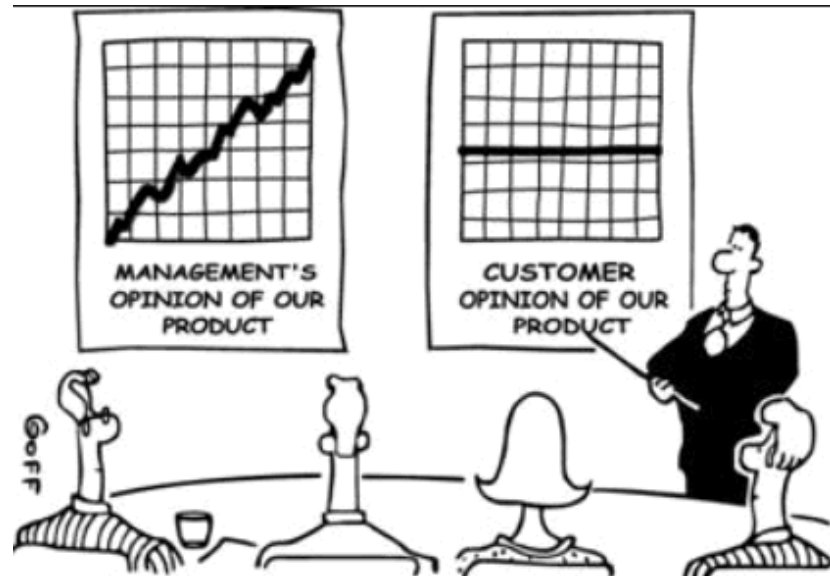
Guidelines: Outcome-Based Performance Measures

- Be careful to distinguish an activity from the outcome of the activity. *Performing* a task or a series of tasks is not an outcome!

- Ask yourself: How did the product or service impact the customer.

- So, don't define a performance measure from your perspective. Write it from the customer's perspective!

What Do We Measure?

Work Plan

Activity #1   Activity #2   Activity #n

Outcome   Outcome   Outcome

1 **Quality of outcome**

2 **Progress towards achieving outcome**

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When Developing a Product – Measure Progress

Setting a target date for your commitment allows you to look forward and effectively plan next steps.

Measuring schedule performance using interim milestones provides an early warning indicator that alerts you if the project is slipping.
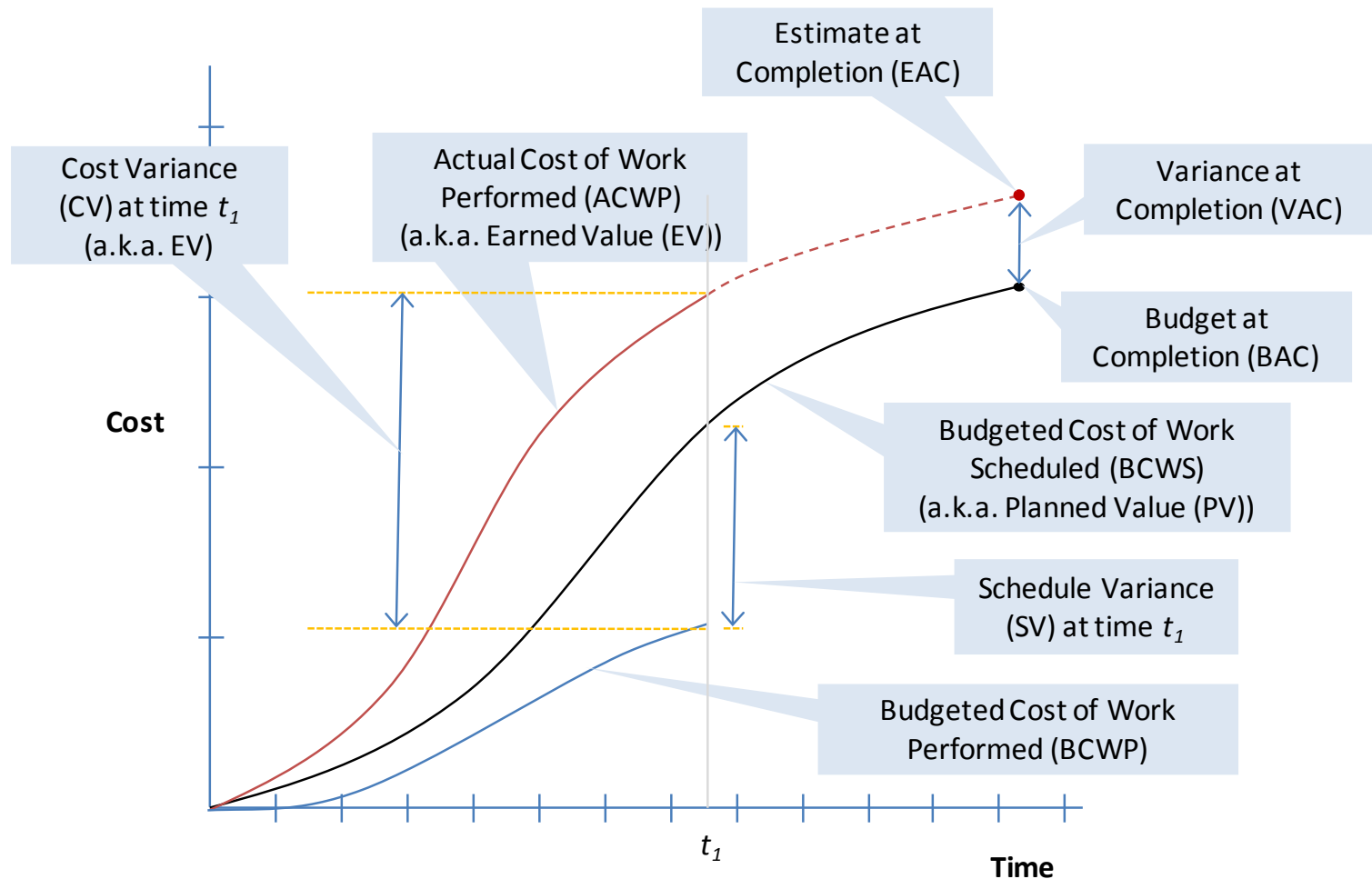
Understanding schedule progress allows you to take corrective actions (a recovery plan) so that you meet your commitment.

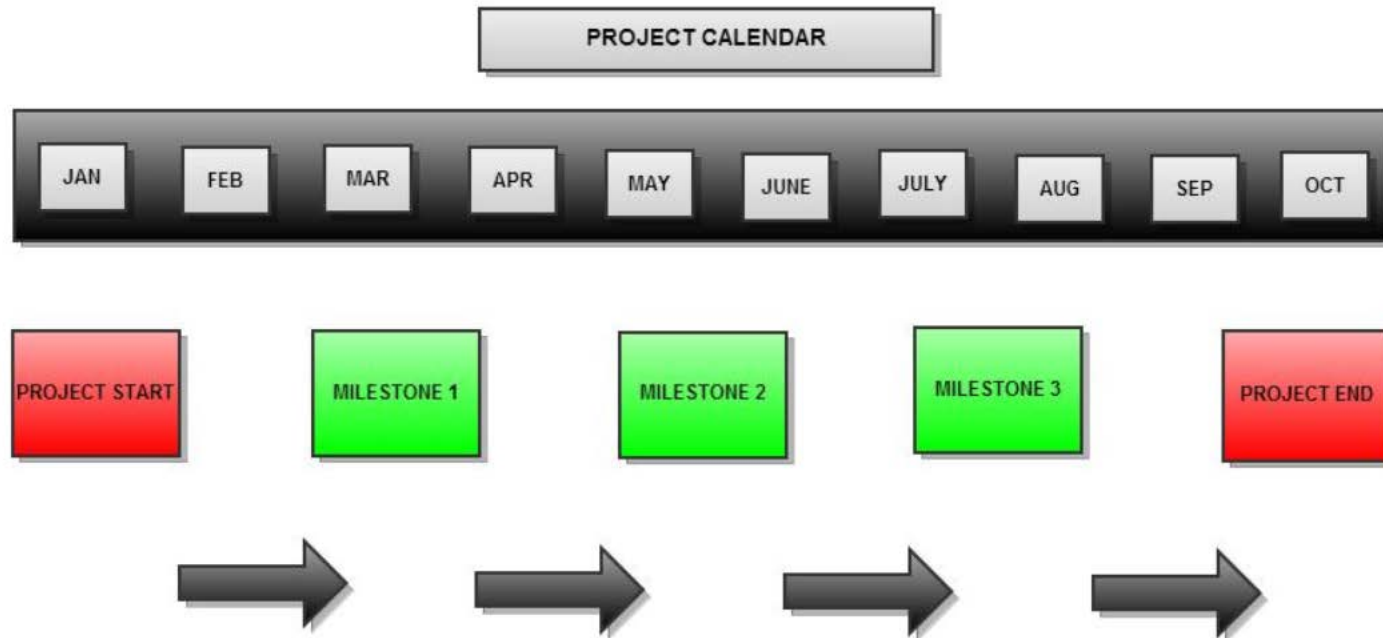Schedule performance can be measured using:

- a quantitative measure

       or

- a qualitative measure

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Quantitative Example: Earned Value

Qualitative Example: Milestones Completed

Example: Schedule-Based Qualitative Performance Measure

New Technology Introduction	Target Milestone Date
▪ Requirements defined	Oct. 22, 2014
▪ Design completed	Nov. 30, 2014
▪ Prototype developed	March 1, 2015
▪ Testing completed	April 1, 2015
▪ Rollout completed	August 15, 2015

Used to track progress in project plan.

Target criterion expressed in project plan and defined as part of performance measure.

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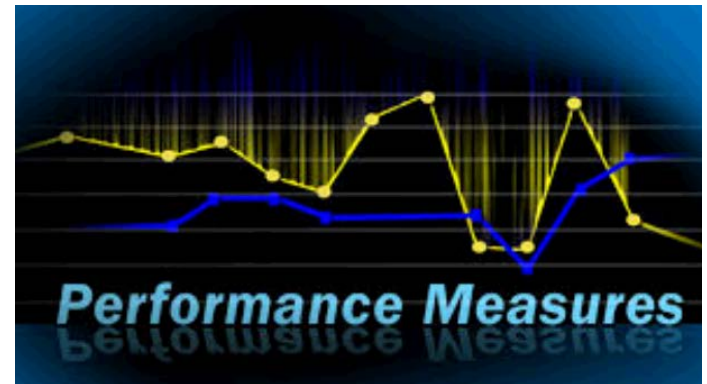
Controlling Your Destiny

- To control the way you work, you must plan your projects.

- For management to trust these plans, you must make accurate plans.

- To make accurate plans, you must have data.

- To have data, you must measure your performance.
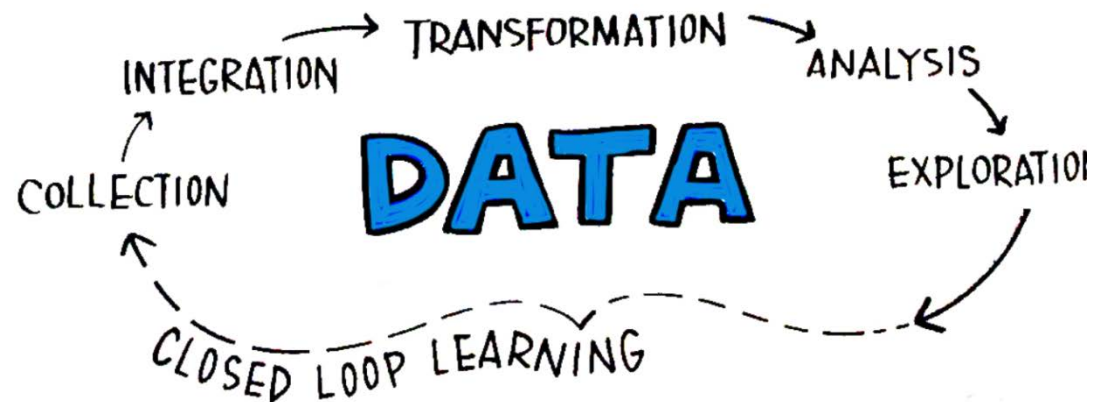
Management 101

Performance measures must be part of every work plan.

The measures should be tracked closely by the individual who is managing the work effort.

Tracking Status

If you cannot recognize a one-day slip, you can only take action when the delay is obvious.

But, by then, it is usually too late to recover.

"…schedule slips, one day at a time."

- Fred Brooks in The Mythical Man Month

Relationship of Plans to Performance Measurement

Office work plan tracking of
performance measures
(e.g., daily or weekly tracking)

Quarterly snapshots
of performance measures
are submitted to the
performance measurement
tracking system

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When Performance Measurement Goes Bad

1. Laziness

2. Vanity

3. Narcissism

4. Too Many

5. Pettiness

6. Inanity

51

Laziness

Measuring what is *easy* to measure … instead of what is *important* to measure.

a.k.a.
The Measurement Inversion

Measurement Inversion

Measurement Inversion

Typical

Low-value measures

- Time spent in an activity
- # documents developed
- Attendance at Quality Improvement training
- Near-term costs of a project
- # of violations found in safety inspections

**Often Ignored**

High-value measures

- Value of an activity
- Impact based on purpose of document
- Effect of training on # product defects
- Long-term benefits of a project
- Reduction in risk of catastrophic accidents

② Vanity

Gaming the System …

The sin of using metrics that you have mastered, or that make you look good, rather than help drive *improved* performance results.

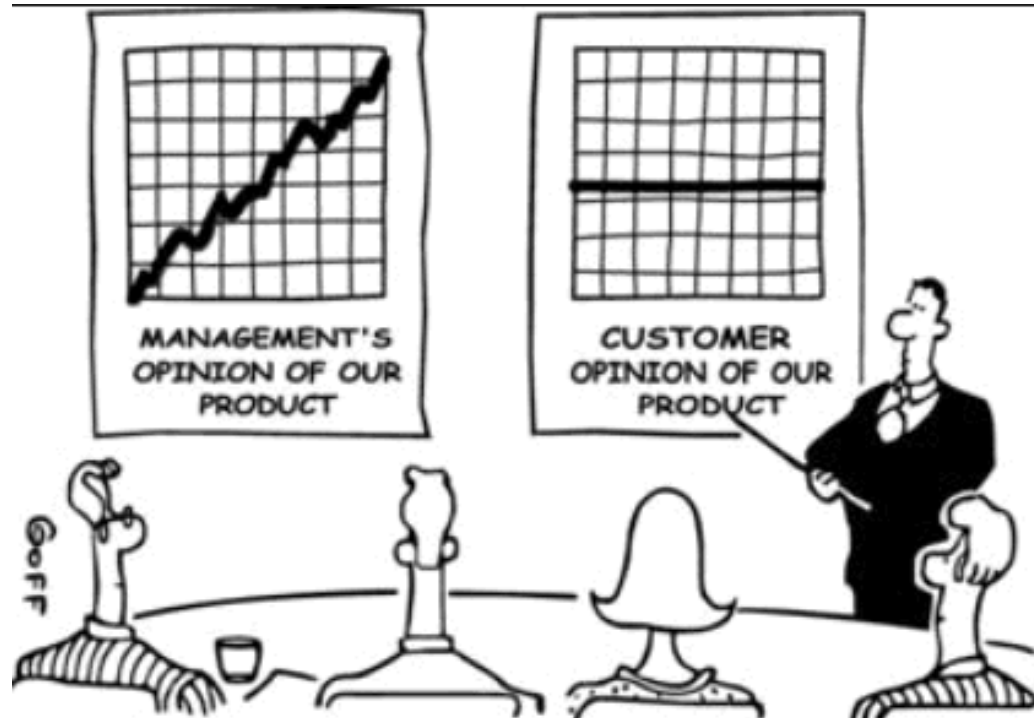Software Engineering Institute | Carnegie Mellon University
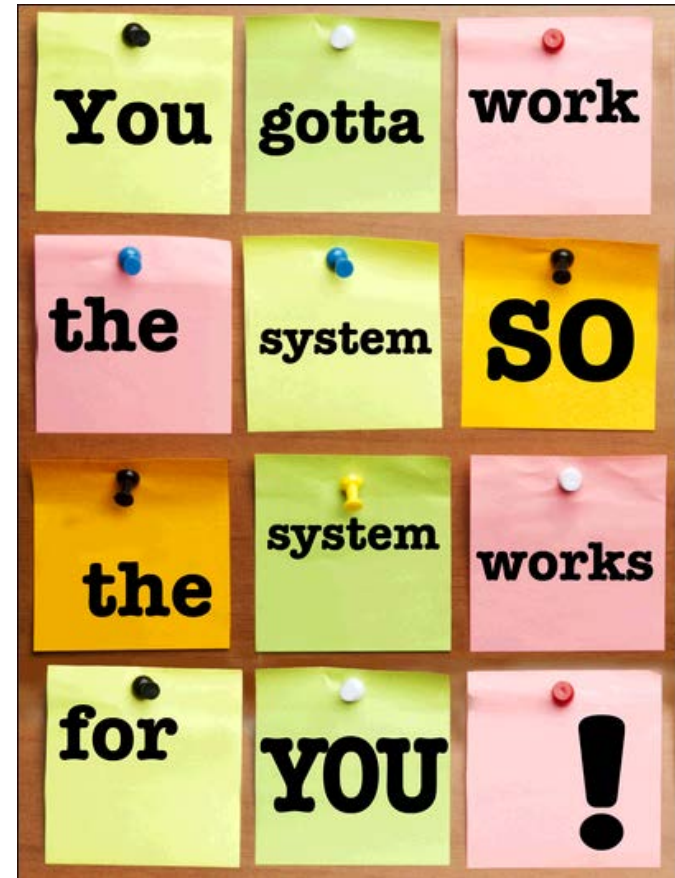
③ Narcissism

Measuring performance from the organization's point of view, rather than from the customer's perspective.

④ Too Many Measures

Too many measures tends to distract management from those most *critical* to managing the organization.

57
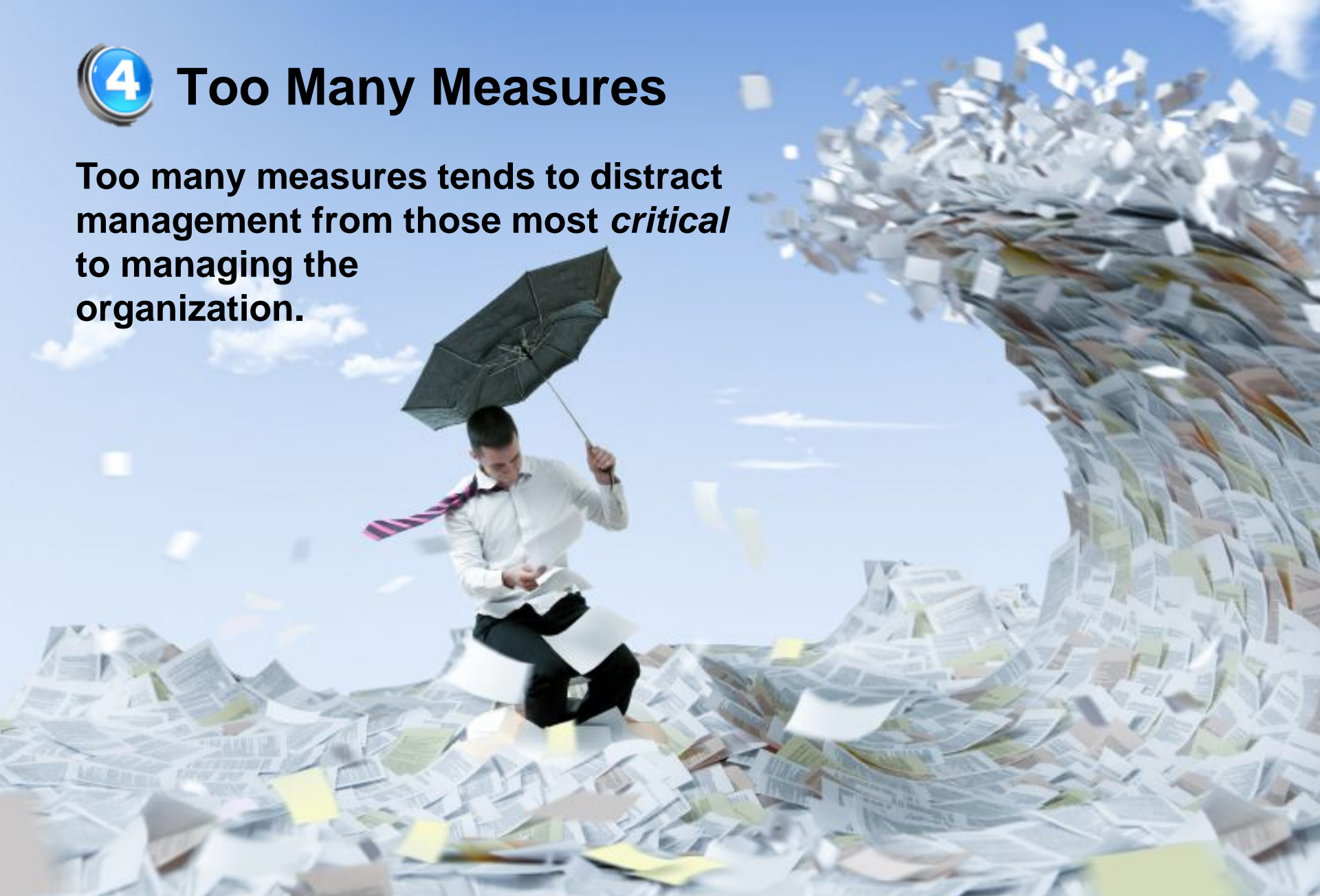
You Need Data To Manage

Metrics are good.

But …

This Is A Data Collection Fallacy

GOOD ——▶ Metrics are good.

BETTER ——▶ More would be better.

BEST ——▶ Most is best.
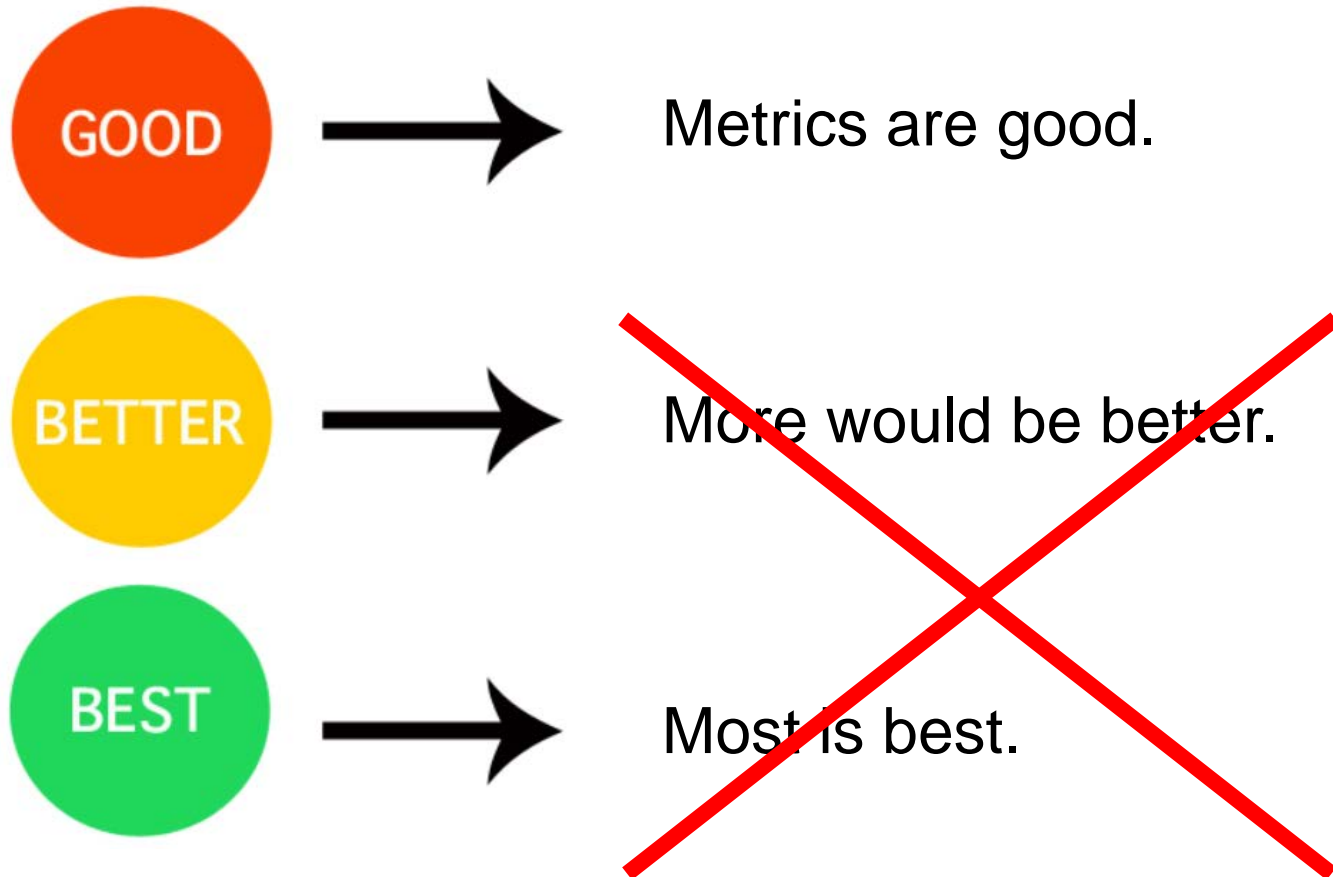
5 Inanity

Some organizations create metrics without any consideration for the consequences.

6 Pettiness

Organizations sometimes focus on a small part of what matters, rather than on the totality, or end results.

the ELEPHANT in the ROOM

61

Module Topics

Introduction to performance management

When performance measurement goes bad

▶ What does a "good" performance measure look like?

Putting it all together: Developing effective performance measures

62
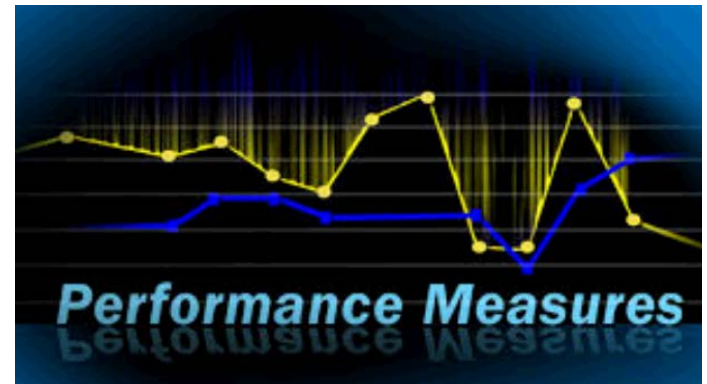
What Is a "Good" Performance Measure?

Well-formed performance measures are the answer to the "M" part of SMART.

A performance measure provides objective evidence of the degree to which a performance result is occurring over time.

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The intended measure does not seem to be measuring the outcome of the described activity.

Instead, it is measuring the implementation of an already developed program.

Activity

Measure

Develop risk management program for DoD/VA Information Sharing¤

Produce Risk Management Reports Monthly and Resolve risks within target dates 80% of the time¤

The outcome of this activity is:

• A risk management program.

What is the "program." Is it a process? A database? A service? All of the above?

Is this a performance measure? It is expressed as an *activity*. "Produce …"

This is also a compound statement:

(a) produce reports

(b) resolve risks

Some Pretty Good Examples - 1

Department of Agriculture
Program: Rural Utilities Service Telecommunications Program

Measure

Percentage of rural telecommunications subscribers
receiving new or improved service

Explanation

The purpose of this program is to improve and expand telecommunications in rural areas. The measure directly relates to this purpose. Once targets are established, this measure will indicate whether the program is effective. In addition, over time this measure will provide information on the portion of rural America benefiting from program loans.

The measure supports the agency's mission to support rural America. Performance is measured using a formula based on the number of subscribers supported by new loan funds divided by the total number of rural subscribers of active borrowers (both are based on data reported by borrowers). The data is verifiable since borrower records on the number of customers could be used to verify the numbers reported to USDA.

Some Pretty Good Examples - 2

Department of Commerce
Program: Patent and Trademark Office

Measure
Cost per patent disposed

The outcome they are interested in is "improved efficiency."

Explanation

A primary measure of the efficiency of processing patents is the cost per patent disposed.

The measure is calculated by dividing total PTO expenses associated with the examination and processing of patents (including associated overhead and support expenses) by production units.

66

Some Pretty Good Examples - 3

Department of Education
Program: Troops-To-Teachers

Measure

Percentage of Troops-To-Teachers who remain in teaching for three or more years after placement in a teaching position in a high-need school.

Explanation

The Troops-to-Teachers program recruits, prepares and places retired military personnel as teachers in elementary and secondary schools in "high-need" school districts.

One of the Department's highest priorities is to improve teacher quality across the country, especially in school districts serving a large proportion of students from low-income families.

This measure is a useful indicator of the program's effectiveness in its two key outcomes: placement and persistence.

Program information is collected from participating State and regional offices which are required by statute to report on retention rates of their program completers.

Activity … but it's referring to the outcome that they are interested in.

This is the outcome of interest. This is what's measured!

Some Pretty Good Examples - 4

Department of Health and Human Services
Program: Foster Care

Measure

The percentage of children with substantiated reports of maltreatment that have a repeated report within six months.

Explanation

The purpose of this program is to help States provide care for children who are under the jurisdiction of the administering State agency and need temporary placement outside their homes, in a foster family home or an institution. HHS provides funds to States to assist with: the costs of foster care maintenance for eligible children; administrative costs to manage the program; and training for staff, for foster parents and for certain private agency staff.

This measure shows the system's relative success at preventing child abuse by highlighting when it fails to do so.
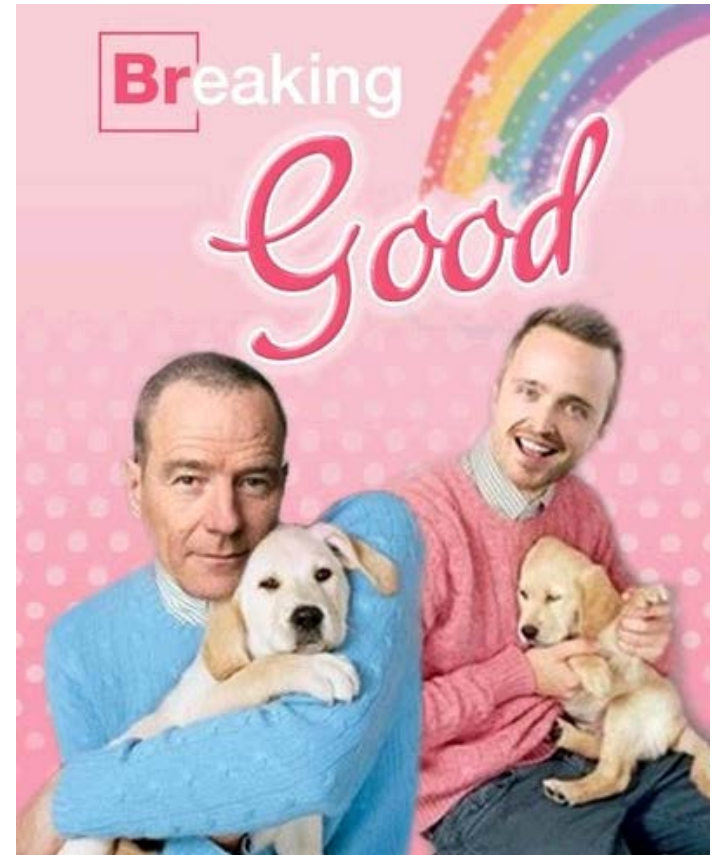
The data comes from HHS' data system-- Adoption and Foster Care Analysis and Reporting System, and is verifiable and reliable.

Desired outcome.

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When Performance Measurement Goes Good

1. Relevant

2. Avoids perverse incentives

3. Well-defined

4. Timely

5. Reliable

6. Comparable

7. Verifiable

Testing a Measure Using the Goodness Criteria

Criteria	Questions
Relevant	- Does the measure attempt to capture success around a key OIA objective? - What does it tell you about how your are performing? - Does it accurately represent what you are trying to assess?
Avoids perverse incentives	- Does the measure encourage unwanted behavior (e.g., not reporting mistakes)? - Could you improve the measure without really improving actual performance? - Does it allow innovation? Or does it discourage improvements to service delivery?
Well-defined	- Is the measure expressed clearly so that it is easily understood? - Does it have an unambiguous definition, so it can be collected consistently? - Can you gather all the data or evidence you need to produce the measure?

70

Testing a Measure Using the Goodness Criteria

Criteria	Questions
Timely	▪ Does the measure provide information in time for action to be taken? ▪ What's the lag between the event and information becoming available?
Reliable	▪ Is the performance measure accurate enough for its use? ▪ Has the measure been validated as a useful indicator by your manager? ▪ Will the measure change because of issues outside your control?
Comparable	▪ Does the measure allow comparison with past performance? ▪ Does it allow comparison with other agencies delivering a similar service?
Verifiable	▪ Does documentation exist so that the process behind the measure can be validated? ▪ Given the documentation, could an objective outsider come up with the same results?

Module Topics

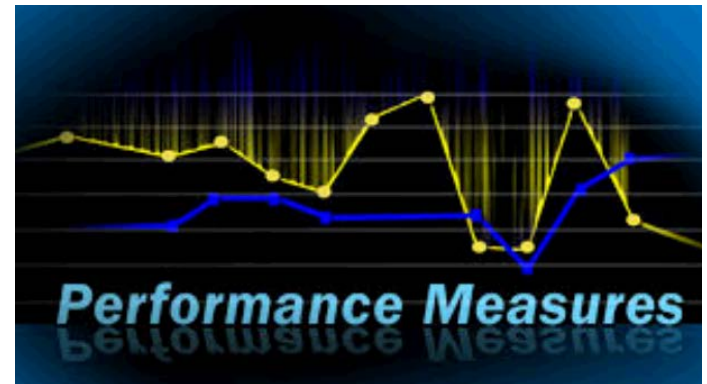Introductory concepts

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▶ Putting it all together

Performance Measures

Planning Your Performance Measure

Performance Measurement Planning Worksheet

Part I. New Product Development

Quality-Based Performance Measure		
Activity	Describe what you will do.	
Activity Outcome	What will be the tangible result of what you do? What is the product?	
Customer	Who will use or benefit from your product?	
Quality and Impact	How will the customer benefit from your product?	
	What concerns might the customer have about this product?	
	What are the most important characteristics of the product that the customer will care about?	
	How will the customer judge the quality of this product?	
	How will you assess the quality of what you are delivering to the customer?	
	Is your quality performance measure quantitative or qualitative?	
	If you are using a qualitative measure, what are the categorical variables that will characterize the quality of your product?	
Perf. Meas. – Quality	Write the definition for your quality-based performance measure. Be sure to include the unit of scale for the measure.	
Data Collection	Where will you obtain the performance measurement data?	
	How will you collect the data you need for your performance measure?	
	How often will you collect the performance measurement data?	
Relevance Check	How does your performance measure capture the most important aspects of the product's objective?	
Target for Quality	Describe the value of the quantitative or qualitative performance measure at the end of FY2015 or the date if completed before the end of FY2015.	

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P a g e | 1 of 3

Let's Practice Together

Vader used to practice in front of the mirror for hours.

The Scenario

The Need:

35% of young veterans (18-24 year olds) are unemployed. Economists cite a lack of marketable civilian skills and the need for education degrees, vocational certifications and experience in professional settings.

Intervention:

Provide support to veterans in completing training programs by:

- Locating appropriate programs
- Securing financial aid
- Providing tutoring resources and internship placements

Additional Information:

The "young veterans" were interviewed about the proposed intervention. Two concerns were expressed. Young veterans feel that they need to make a minimum of $15/hour to support their needs. Many responded that they currently have limited access to a computer.

Education records of the veterans are updated regularly in the Agency's database. Financial aid records are accessible through the Department of Education. Employment status is tracked by the Agency on a weekly basis and recorded in the Agency's database.

Part 2. Service Delivery

Quality-Based Performance Measure		
Activity	Describe what you will do.	
Activity Outcome	What will result from the service that you provide?	
Customer	Who will use or benefit from your service?	

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Part 2. Service Delivery

Quality-Based Performance Measure		
Quality and Impact	How will the customer benefit from your service?	
	What concerns might the customer have about your service?	
	What are the most important characteristics of the service that the customer will care about?	
	How will the customer judge the quality of your service?	
	How will you assess the quality of the service that you deliver to the customer?	
	Is your quality performance measure quantitative or qualitative?	
	If you are using a qualitative measure, what are the categorical variables that will characterize the quality of your product?	

Quality-Based Performance Measure		
Perf. Meas. – Quality ⓘ	Write the definition for your quality-based performance measure. Be sure to include the unit of scale for the measure.	
Data Collection	Where will you obtain the performance measurement data?	
	How will you collect the data you need for your performance measure?	
	How often will you collect the performance measurement data?	
Relevance Check	How does your performance measure capture the most important aspects of the product's objective?	
Target for Quality	Describe the value of the quantitative or qualitative performance measure at the end of FY2015 or the date if completed before the end of FY2015.	

Transferring The Data

Performance Measurement Spreadsheet

Current Performance Measurement Template

Term	Definition
Office	Division's office.
Activity	A succinct description of the task being measured, including a clear outcome.
Start (mm/yyyy)	Date you will start measuring.
End (mm/yyyy)	Date the target should be achieved.
Measure	A scaled quantitative or qualitative variable that represents an important attribute of the activity being measured.
Target	A particular value for the performance measure that is to be accomplished by a specific date in the future. Both the value and the date must be specified.
Frequency	The frequency that you track the measure.
Data Source	The source of the measurement data.
Measure Owner	Name of individual responsible for all activity related to this measure. Provides the data needed to establish and maintain the measure.
Data Entry	Name of person doing the data entry in the online tool.
Comments	Additional comments of clarification if needed.

80

Mapping Worksheet Results to PM Template

Planning Worksheet Section	Performance Management Template
	Office
Activity and Activity Outcome	Activity
	Start (mm/yyyy)
Completion Date	End (mm/yyyy)
▪ Perf. Meas. – Quality ▪ Perf. Meas. – Schedule	Measure
▪ Target for Quality ▪ Target for Schedule	Target
Data Collection (How often will you collect …)	Frequency
▪ Data Collection (Where will you obtain …) ▪ Tracking Tool	Data Source
	Measure Owner
	Data Entry
	Comments

81

Reminder: Relationship of Work Plan to Per. Meas. System
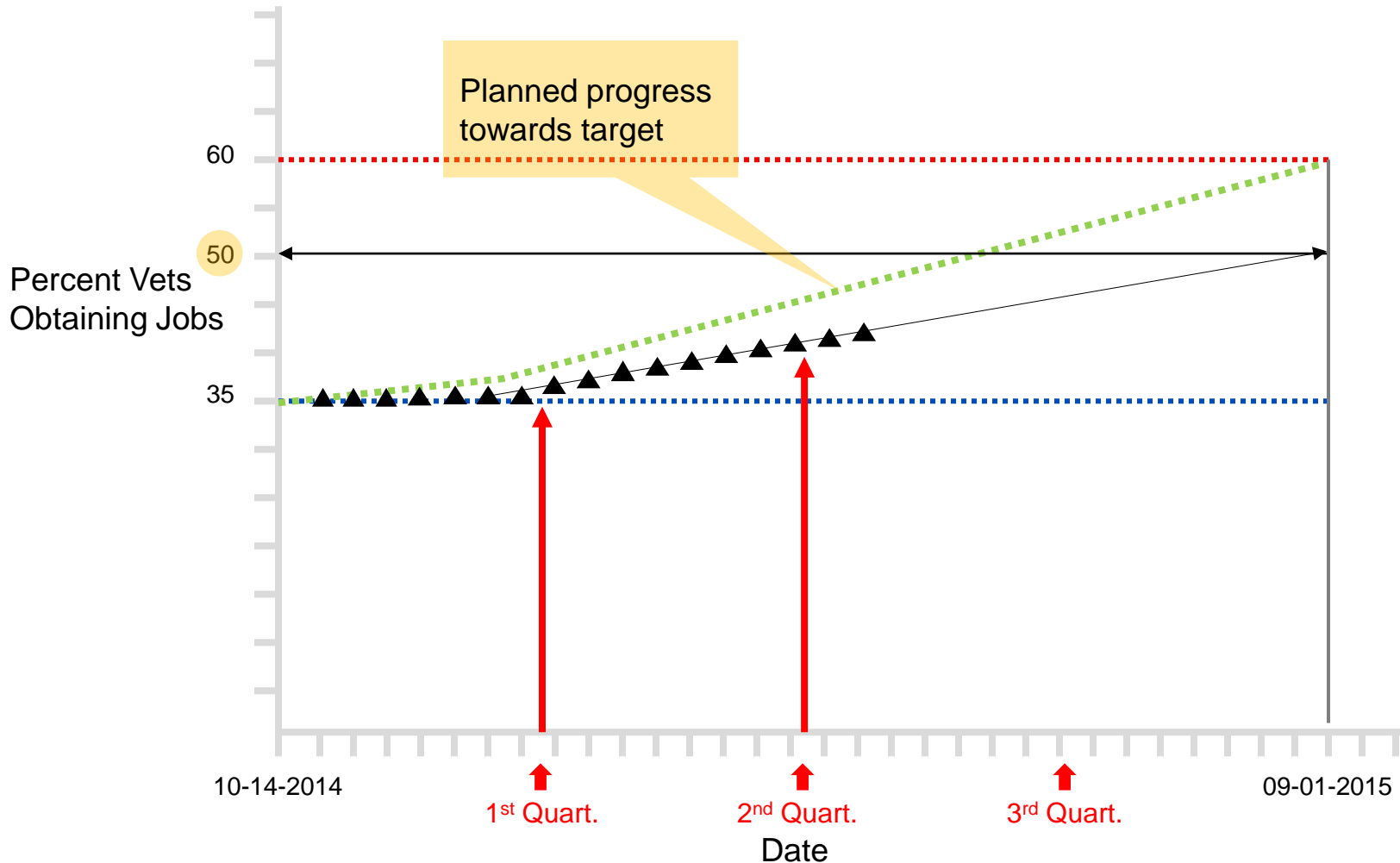

Division work plan tracking of performance measures
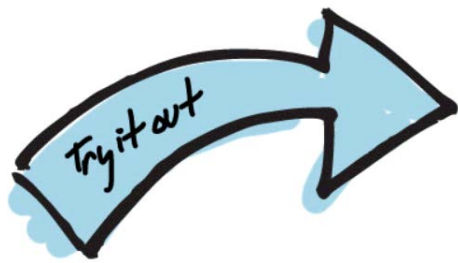(e.g., daily or weekly tracking)

Quarterly snapshots
of performance measures
are submitted to the
performance measurement
tracking system

Weekly Tracking of Performance Measure

Try it out

1. Break out into your groups.

2. Each group designates
   - Facilitator
   - Time keeper
   - Spokesperson

3. Use the performance measurement planning template to organize your work.

4. Group decides when to take a break.

5. If you complete development of a performance measure, start in on an additional one. Keep on rolling, but be prepared to report out on one of your performance measures during the outbrief.

Ask for help!

Contact Information

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